



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140


October 5, 2010

Reply To

Attn. Of: **OEA-095**

MEMORANDUM

SUBJECT: Data Validation Report for Metals Analysis of Water Samples Collected for the South Tacoma Seep Site Inspection - Case 40457, SDG: MJD1N3

FROM: Donald Matheny, Chemist 
USEPA R10, OEA, Environmental Services Unit

TO: Brandon Perkins, Site Assessment Manager
Office of Environmental Clean-up, USEPA R10 (ECL-112)

CC: Renee Nordeen, Ecology & Environment

The quality assurance (QA) review of the analytical data generated from the analysis of three (3) water samples collected from the above referenced site has been completed. These samples were analyzed for total metals by A4 Scientific, located in the Woodlands, Texas.

All sample analyses were evaluated following EPA's Stage 4 Data Validation Electronic/Manual Process (S4VEM). The validation was conducted according to the Quality Control Specifications outlined in the Sampling & Quality Assurance Project Plan for the South Tacoma Channel Seep (July, 2010), the specifications of the EPA Contract Laboratory Program's (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Inorganic Analyses (ISM01.2), the Contract Laboratory Program's National Functional Guidelines for Inorganic Data Review, and the Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA-540-R08-005). Some data may be qualified using the reviewer's professional judgment. The conclusions presented herein are based on the information provided for the review.

A summary of samples evaluated in this validation report and the pertinent dates for sample collection, sample receipt at the laboratory, extraction and analyses is attached along with the validated data.

I. QUALITY CONTROL RESULTS SUMMARY

Quality Control Test	Result Ranges	Outliers?	Evaluation Criteria
LCS (blank spike)	88 - 111%	N	70 - 30%; (Ag, Sb 50 - 150%)
Blanks	Within criteria	Y*	Non-detect or <10% of Sample
Sample Duplicate (MJD1N3)	± CRQL	N	≤ 20% RPD or ± CRQL
Matrix Spike (MJD1N3)	89 - 111%	Y*	75 - 125%
Serial Dilution (MJD1N3)	≤ 1%	N	≤ 10%

*See the "Data Qualifications" section below for excursions and qualification of affected data.

II. DATA QUALIFICATIONS

Summary of Validation Qualifiers Applied

After the manual and electronic data review, the following data qualifications were applied:

Blanks	Mercury, ICP_AES
ND04	The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated CCB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.
	Mercury - All Samples Iron - MJD1N5
Detection Limit	ICP_AES
NDL1	The following samples have results greater than or equal to MDLs but less than CRQLs. Detected analytes are qualified Q.
	Potassium - All Samples Manganese - MJD1N5
Initial Calibration	ICP_AES
NB033	The following ICP-AES samples are associated with initial calibration standards that have analyte %D outside -30 to 30% window. Non-detected analytes are qualified UJ.
	Copper - All Samples
Matrix Spikes	ICP_AES
NG11	The following Matrix Spike samples have percent recoveries in the range of 30-74% and post-digestion spike samples have percent recoveries greater than or equal to 75% (not required for Ag). Non-detected analytes are qualified UJL. Values may be biased low.
	Silver - All Samples

Data Qualifiers

The following is a list of validation qualifiers applied to the sample result(s) when needed to indicate associated out-of-control QA/QC results.

Data Qualifiers	
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The associated value is an estimated quantity.
UJ	The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The data are unusable. The analyte may or may not be present in the sample.
Project Specific Data Qualifiers	
L	Low bias.
H	High bias.
K	Unknown Bias.
Q	Detected concentration is below the method reporting limit / Contract Required Quantitation Limit, but is above the method detection limit.

III. SAMPLE INDEX

Sample Number	Matrix	Sampling Date	Date Received	ICP Analysis		Mercury Analysis	
				Prep. Date	Analysis Date	Prep. Date	Analysis Date
MJD1N3	Water	09/01/2010	09/03/2010	09/20/2010	09/ 21-23 /2010	09/14/2010	09/14/2010
MJD1N4	Water	09/01/2010	09/03/2010	09/20/2010	09/ 21-23 /2010	09/14/2010	09/14/2010
MJD1N5	Water	09/01/2010	09/03/2010	09/20/2010	09/ 21-23 /2010	09/14/2010	09/14/2010

Case No:	40457	Contract:	EPW09035	SDG No:	MJD1N3	Lab Code:	A4
Sample Number:	MJD1N3	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SP01GW	pH:	1.5	Sample Date:	09012010	Sample Time:	09:40:00
% Moisture :		% Solids :					

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	200	ug/L	1	UN	U	Yes	S4VEM
Antimony	60.0	ug/L	1	U	U	Yes	S4VEM
Arsenic	10.0	ug/L	1	U	U	Yes	S4VEM
Barium	200	ug/L	1	U	U	Yes	S4VEM
Beryllium	5.0	ug/L	1	U	U	Yes	S4VEM
Cadmium	5.0	ug/L	1	U	U	Yes	S4VEM
Calcium	22200	ug/L	1			Yes	S4VEM
Chromium	10.0	ug/L	1	U	U	Yes	S4VEM
Cobalt	50.0	ug/L	1	U	U	Yes	S4VEM
Copper	25.0	ug/L	1	U	UJ	Yes	S4VEM
Iron	100	ug/L	1	U	U	Yes	S4VEM
Lead	10.0	ug/L	1	U	U	Yes	S4VEM
Magnesium	19200	ug/L	1			Yes	S4VEM
Manganese	15.0	ug/L	1	U	U	Yes	S4VEM
Nickel	40.0	ug/L	1	U	U	Yes	S4VEM
Potassium	2680	ug/L	1	J	Q	Yes	S4VEM
Selenium	35.0	ug/L	1	U	U	Yes	S4VEM
Silver	10.0	ug/L	1	UN	UJL	Yes	S4VEM
Sodium	9490	ug/L	1			Yes	S4VEM
Thallium	25.0	ug/L	1	U	U	Yes	S4VEM
Vanadium	50.0	ug/L	1	U	U	Yes	S4VEM
Zinc	60.0	ug/L	1	U	U	Yes	S4VEM

DM
10-5-10

Case No:	40457	Contract:	EPW09035	SDG No:	MJD1N3	Lab Code:	A4
Sample Number:	MJD1N3	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SP01GW	pH:	1.5	Sample Date:	09012010	Sample Time:	09:40:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	J	U	Yes	S4VEM

DM
10-5-10

Case No:	40457	Contract:	EPW09035	SDG No:	MJD1N3	Lab Code:	A4
Sample Number:	MJD1N4	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SP02GW	pH:	1.5	Sample Date:	09012010	Sample Time:	10:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	200	ug/L	1	UN	U	Yes	S4VEM
Antimony	60.0	ug/L	1	U	U	Yes	S4VEM
Arsenic	10.0	ug/L	1	U	U	Yes	S4VEM
Barium	200	ug/L	1	U	U	Yes	S4VEM
Beryllium	5.0	ug/L	1	U	U	Yes	S4VEM
Cadmium	5.0	ug/L	1	U	U	Yes	S4VEM
Calcium	18900	ug/L	1			Yes	S4VEM
Chromium	10.0	ug/L	1	U	U	Yes	S4VEM
Cobalt	50.0	ug/L	1	U	U	Yes	S4VEM
Copper	25.0	ug/L	1	U	UJ	Yes	S4VEM
Iron	100	ug/L	1	U	U	Yes	S4VEM
Lead	10.0	ug/L	1	U	U	Yes	S4VEM
Magnesium	18200	ug/L	1			Yes	S4VEM
Manganese	15.0	ug/L	1	U	U	Yes	S4VEM
Nickel	40.0	ug/L	1	U	U	Yes	S4VEM
Potassium	2520	ug/L	1	J	Q	Yes	S4VEM
Selenium	35.0	ug/L	1	U	U	Yes	S4VEM
Silver	10.0	ug/L	1	UN	UJL	Yes	S4VEM
Sodium	8000	ug/L	1			Yes	S4VEM
Thallium	25.0	ug/L	1	U	U	Yes	S4VEM
Vanadium	50.0	ug/L	1	U	U	Yes	S4VEM
Zinc	60.0	ug/L	1	U	U	Yes	S4VEM

PM
10-5-10

Case No:	40457	Contract:	EPW09035	SDG No:	MJD1N3	Lab Code:	A4
Sample Number:	MJD1N4	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SP02GW	pH:	1.5	Sample Date:	09012010	Sample Time:	10:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	J	U	Yes	S4VEM

DM
10-5-10

Case No:	40457	Contract:	EPW09035	SDG No:	MJD1N3	Lab Code:	A4
Sample Number:	MJD1N5	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SP03GW	pH:	1.5	Sample Date:	09012010	Sample Time:	11:27:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	200	ug/L	1	UN	U	Yes	S4VEM
Antimony	60.0	ug/L	1	U	U	Yes	S4VEM
Arsenic	10.0	ug/L	1	U	U	Yes	S4VEM
Barium	200	ug/L	1	U	U	Yes	S4VEM
Beryllium	5.0	ug/L	1	U	U	Yes	S4VEM
Cadmium	5.0	ug/L	1	U	U	Yes	S4VEM
Calcium	25000	ug/L	1			Yes	S4VEM
Chromium	10.0	ug/L	1	U	U	Yes	S4VEM
Cobalt	50.0	ug/L	1	U	U	Yes	S4VEM
Copper	25.0	ug/L	1	U	UJ	Yes	S4VEM
Iron	100	ug/L	1	J	U	Yes	S4VEM
Lead	10.0	ug/L	1	U	U	Yes	S4VEM
Magnesium	18000	ug/L	1			Yes	S4VEM
Manganese	13.0	ug/L	1	J	Q	Yes	S4VEM
Nickel	40.0	ug/L	1	U	U	Yes	S4VEM
Potassium	2750	ug/L	1	J	Q	Yes	S4VEM
Selenium	35.0	ug/L	1	U	U	Yes	S4VEM
Silver	10.0	ug/L	1	UN	UJL	Yes	S4VEM
Sodium	11100	ug/L	1			Yes	S4VEM
Thallium	25.0	ug/L	1	U	U	Yes	S4VEM
Vanadium	50.0	ug/L	1	U	U	Yes	S4VEM
Zinc	60.0	ug/L	1	U	U	Yes	S4VEM

DM
10-5-10

Case No:	40457	Contract:	EPW09035	SDG No:	MJD1N3	Lab Code:	A4
Sample Number:	MJD1N5	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SP03GW	pH:	1.5	Sample Date:	09012010	Sample Time:	11:27:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	J	U	Yes	S4VEM

DM
10-5-10